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Role of organic soils in the world carbon cycle: problem definition and research needs

Description/Abstract

Findings and recommendations of the workshop on organic soils are summarized. The major finding of the workshop is that organic soils are important in the overall carbon budget. Histosols and gleysols, the major organic soil deposits of the world, normally sequester organic carbon fixed by plants. They may now be releasing enough carbon to account for nearly 10% of the annual rise in atmospheric content of CO₂. Current annual release of carbon from organic soils is estimated to fall within the range of 0.03 to 0.37 x 10⁹ t, a release equivalent to 1.3% to 16% of the annual increase of carbon in the atmosphere. If half of the released carbon remains airborne, organic soils contribute 0.6% to 8.0% of the annual rise in CO₂. Uncertainties in data suggest the actual release could lie outside the range. Present annual releases of carbon from the Everglades Agricultural Area in Florida and the Sacramento-San Joaquin Valley in California are estimated at 0.017 x 10⁹ tons. When combined with additional carbon release from other known drainage programs and the possibility of major drainage activity in the tropics, this figure suggests that the lower limit of the world estimate of carbon release from organic soils is too low. Annual sequestering of carbon by undrained organic soils has been estimated at about 0.045 x 10⁹ tons. This estimate is based on only a few studies, however, and precision is probably no better than an order of magnitude. Several strategies for peatland management are available, including creation, preservation, functional designation, and use of wetlands for agriculture and energy supply.

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